

REMARKS

Claim 1 has been amended, claim 31 and has been canceled without prejudice or disclaimer, and claims 1-4 and 7-30 are pending and under consideration. No new matter is presented in this Amendment.

REJECTIONS UNDER 35 U.S.C. §103:

Claims 1, 2, 4, 9, 11-13, 16-18, 21-24 and 29-31 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Chow (U.S. Patent No. 5,157,240; "Chow") in view of Chandler (U.S. Patent No. 2,799,764; "Chandler") or Isaacson et al. (U.S. Patent No. 3,842,241; "Isaacson") and Yamashita et al. (U.S. Patent No. 5,034,200; "Yamashita") or Fassell (U.S. Patent No. 3,811,900; "Fassell"). The cancellation of claim 31 renders the rejection of this claim moot.

Claim 1, as amended, recites a heating crucible wherein the heat-resistant layer blocks heat generated by the cover heater from being transferred outside the heating crucible.

Chow fails to teach or suggest the invention as claimed. Chow teaches a protective layer 25' made from pyrolytic boron nitride. Col. 5, lines 46-47. Chow discloses that use of protective layer 25' "avoids the incorporation into the films being deposited of contaminants." Col. 6, lines 30-35. Chow fails, however, to teach or suggest that protective layer 25' or any other layer *blocks heat* generated by a cover heater from being transferred outside a heating crucible. In fact, based on the August 3, 2009 decision of the Board of Patent Appeals and Interferences, the protective layer 25' made from pyrolytic boron nitride taught by Chow is not even definitely a heat resistant layer. According to the Board's decision:

[T]here is no certainty that the protective layer 25' of Chow impedes a heat transfer, since it is made from pyrolytic boron nitride like the rest of the crucible and cover. Since this substance *transmits heat* from the heaters in the lid into the internal space of the crucibles without touching the molten material, it is reasonable to assume that the pyrolytic boron nitride is not a heat resistant layer *as [the Applicants] define the term*. Therefore, not only is the Examiner's claim construction of "heat resistant layer" unreasonably broad, but using the Examiner's broad claim construction, there is not evidence that Chow would meet the broad construction.

Thus, as stated by the Board, not only is the Examiner's claim construction of "heat-resistant layer" unreasonably broad, but accordingly, there is no evidence that Chow would meet the broad construction. Furthermore, nowhere does Chow teach a heat-resistant layer that *blocks heat* generated by a cover heater from being transferred outside the heating crucible. Chow instead teaches away from the claimed invention since, as noted in the Board's opinion, the

protective layer 25' of Chow is made of a substance which actually *transmits heat*. As clearly documented in Applicants' Reply Brief previously submitted on September 18, 2007, it was well known to a person of ordinary skill in the art at the time the invention was made that pyrolytic boron nitride has high thermal conductivity, and thus transmits heat, rather than blocking transmission of heat. Applicants direct the Examiner's attention to the numerous references cited in Applicants' Reply Brief, including U.S. Patent No. 4,264,803 to Shinko, which clearly teaches the well-known *thermal conductivity* of pyrolytic boron nitride; and the Morgan Advanced Ceramics literature which also clearly teaches the thermal conductivity of pyrolytic boron nitride (see, e.g., pages 11-13 of Applicants' Reply Brief submitted on September 18, 2007). A person of ordinary skill in the art would thus clearly have understood that pyrolytic boron nitride in fact conducts heat, rather than blocking transmission of heat. Accordingly, it is submitted that Chow fails to provide any teaching or suggestion of the instantly claimed invention.

In the Office Action mailed July 8, 2010, the Examiner again cites to Yamashita and Fassell to further allege that pyrolytic boron nitride is a heat resistant layer. In response, for the reasons of record in Applicants' response filed April 1, 2010, the Examiner's assertion of Yamashita and Fassell fails to remedy the deficiencies of Chow. With the addition of Yamashita and Fassell, the Examiner has not adopted the interpretation of the heat resistant layer as required by the Board but merely to allege that pyrolytic boron nitride has heat resistant properties. However, as the Board has decided, even if pyrolytic boron nitride has heat resistant properties, such properties do not correlate with the terms as defined by the Applicants. Moreover, Yamashita and Fassell fail to teach or suggest a heat-resistant layer that *blocks heat* generated by a cover heater from being transferred outside a heating crucible. Therefore, asserting references that disclose that pyrolytic boron nitride has heat resistant properties does not cure the Examiner's unreasonably broad interpretation of the features as recited in claim 1, and does not cure the deficiencies of Chow.

Claims 2, 4, 9, 11-13, 16-18, 21-24, and 29-30 depend upon and incorporate the features of independent claim 1. If an independent claim is nonobvious under 35 U.S.C. §103, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); and MPEP §2143.03. Therefore, it is respectfully requested that these rejections be withdrawn and that claims 2, 4, 9, 11-13, 16-18, 21-24, and 29-30 be allowed to issue.

Claims 3, 14 and 19 are rejected under 35 U.S.C. §103(a) as being unpatentable over Chow in view of Chandler or Isaacson and Yamashita or Fassell as applied to claims 1, 2, 4, 9,

11-13, 16-18, 21-24 and 29-30 above, and further in view of Kano et al. (U.S. Patent 6,242,719).

Claims 7, 8, 15, 25 and 26 are rejected under 35 U.S.C. §103(a) as being unpatentable over Chow in view of Chandler or Isaacson and Yamashita or Fassell as applied to claims 1, 2, 4, 9, 11-13, 16-18, 21-24 and 29-30 above, and further in view of Kawase (U.S. Patent No. 5,656,077) or Tanabe et al. (U.S. Patent No. 6,296,894).

Claim 10 is rejected under 35 U.S.C. §103(a) as being unpatentable over Chow in view of Chandler or Isaacson and Yamashita or Fassell as applied to claims 1, 2, 4, 9, 11-13, 16-18, 21-24 and 29-30 above, and further in view of Okuda et al. (U.S. Patent No. 4,804,823).

Claim 20 is rejected under 35 U.S.C. §103(a) as being unpatentable over Chow in view of Chandler or Isaacson and Yamashita or Fassell as applied to claims 1, 2, 4, 9, 11-13, 16-18, 21-24 and 29-30 above, and further in view of Takagi (U.S. Patent No. 4,217,855).

Claim 27 is rejected under 35 U.S.C. §103(a) as being unpatentable over Chow in view of Chandler or Isaacson and Yamashita or Fassell as applied to claims 1, 2, 4, 9, 11-13, 16-18, 21-24 and 29-30 above, and further in view of Chen et al. (U.S. Patent No. 6,024,799) or Murakami et al. (U.S. Patent No. 5,728,223).

Claims 3, 7, 8, 10, 14, 15, and 19, 20, and 25-27 each ultimately depend upon independent claim 1 and incorporate the features thereof. Because each of the rejections of claims 3, 7, 8, 10, 14, 15, and 19, 20, and 25-27 as described immediately above relies upon the Examiner's inappropriate application of Chow (U.S. Patent 5,157,240), each of the above rejections fails. If an independent claim is nonobvious under 35 U.S.C. §103, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); and MPEP §2143.03. Further, none of the additionally cited references cure the deficiencies of Chow with respect to claim 1 such that no additional comments are necessary. Therefore, it is respectfully requested that these rejections be withdrawn and that claims 3, 7, 8, 10, 14, 15, and 19, 20, and 25-27 be allowed to issue.

ALLOWABLE SUBJECT MATTER:

Claims 28 is allowed over prior art of record.

CONCLUSION:

There being no further outstanding objections or rejections, it is submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.


Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 503333.

Respectfully submitted,

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